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NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
NICKERSON, JEFFREY L	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/583,964	BONSMA ET AL.	
	Examiner	Art Unit	
	JEFFREY NICKERSON	2442	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 July 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is in response to Application No. 10/583,964 filed nationally on 21 June 2006 and internationally on 10 December 2004. The amendment presented on 29 July 2008, which provides change to the abstract, claims 1-3, 5-9, 11, 13, and 15-21, and provides replacement drawings, is hereby acknowledged. Claims 1-21 have been examined.

Drawings

2. The replacement drawings received on 29 July 2008 are accepted. All outstanding objections to the drawings are hereby withdrawn.

Specification

3. The amendment presented on 29 July 2008 providing change to the abstract is noted. All outstanding objections to the specification are hereby withdrawn. New objections may appear below.

4. The title of the invention is objected to under 37 CFR 1.72(a) for failing to be as specific as possible. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: Directory-based distributed hash table with overlay topology.

Response to Arguments

5. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 2, 6, and 7, these claims recite software operable to:

"in response to an enquiry message identifying another of the virtual directories to forward the message to another node of the network" and

"in response to an enquiry message identifying the virtual directory with which the node is associated to generate a reply message identifying the computer".

In each of the above limitations it is unclear which content is in the "enquiry message" and which action is being performed in response to, as there are several possible interpretations. Further regarding these limitations, the phrase "the computer" has no antecedent basis, as the language prior in the claim only refers to a "plurality of computers" or "each computer". For purposes of further examination, the examiner will

consider the first limitation above to read as follows: "in response to an enquiry message that identifies another of the virtual directories, forwarding said enquiry message to another node of the network". For purposes of further examination, the examiner will consider the second limitation above to read as follows: "in response to an enquiry message that identifies a virtual directory the node is associated with, generating a reply message that identifies a computer the node is located on". The same applies for the second series of "software operable" limitations in these claims, wording slightly varied accordingly.

Further regarding claims 1, 2, 6, and 7, these claims have antecedent basis for two virtual nodes (first node defined by first set of limitations i, ii, iii; second node defined by second set of limitations i, ii, iii) and yet both nodes are referred to as "said node", making it ambiguous as to whether there are two nodes, or one node performing both functions.

Regarding claims 3-5 and 8-10, these claims inherit the indefiniteness of their parent claims.

Regarding claims 4, 11 and 13, these claims contain the phrase "or as the case may be", which leaves ambiguity as to whether subsequent enquiry messages are being received or not.

Regarding claims 12 and 14-21, these claims inherit the indefiniteness of their parent claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-4, 6-8, 11-12, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonsma et al ("A distributed implementation of the SWAN peer-to-peer look-up system using mobile agents", 2002), and in further view of Triantafillou et al ("Towards high performance peer-to-peer content and resource sharing systems", 2003), Kwon et al ("An efficient peer-to-peer file sharing exploiting hierarchy and asymmetry", 2003), and Adar et al ("Free Riding on Gnutella", 2000).

Regarding claim 1, Bonsma teaches a distributed computer system comprising a plurality of computers (Bonsma: abstract), said system comprising:

a plurality of computers (Bonsma: section 4),

each computer having at least one first node of a virtual network (Bonsma: section 3), said first node comprising:

ii) linking data comprising addresses of other such nodes (Bonsma: section 3 provides for multiple types of links; Bonsma: section 3.1 provides for identifying based on addresses); and

each computer that having a second node of a virtual network, said second node comprising:

ii) linking data comprising addresses of other such nodes (Bonsma: section 3 and 3.1).

Bonsma does not teach:

wherein the computers each store data items, each data item being assigned to one of a plurality of virtual directories;

wherein the first node is for directory look-up, said first node comprising:

i) data identifying the one of the plurality of virtual directories with which the node is associated;

iii) software operable:

in response to an enquiry message that identifies another of the virtual directories, forwarding said enquiry message to another node of the network; and

in response to an enquiry message that identifies a virtual directory the node is associated with, generating a reply message that identifies a computer the node is located on;

wherein the second node is for item look-up, said second node comprising:

i) data identifying an item with which the node is associated;

ii) wherein other such nodes are each associated with an item assigned to the same virtual directory, whereby said linking data together define a plurality of virtual networks for item look-up, each of which networks corresponds to a respective different directory;

iii) software operable:

in response to an enquiry message that identifies another of the items, forwarding said enquiry message to another node of the network; and

in response to an enquiry message that identifies an item the node is associated with, generating a reply message including the item;

and

wherein at least one computer has retrieval means responsive to receipt of a query identifying a directory and an item within that directory to:

i) send to a node of the virtual network for directory look-up an enquiry message identifying the directory;

ii) upon receipt of a reply message thereto, to send to the computer identified in the reply message an enquiry message identifying the item; and

iii) to receive the reply message containing the item.

Triantafillou, in a similar field of endeavor, teaches:

wherein the computers each store data items, each data item being assigned to one of a plurality of virtual directories (Triantafillou: section 3.2 provides for document categories);

wherein the first node is for directory look-up (Triantafillou: section 3.3, target node), said first node comprising:

i) data identifying the one of the plurality of virtual directories with which the node is associated (Triantafillou: section 3.3, target node step a);

iii) software operable:

in response to an enquiry message that identifies another of the virtual directories, forwarding said enquiry message to another node of the network (Triantafillou: section 3.3, requesting node, steps a-c); and

in response to an enquiry message that identifies a virtual directory the node is associated with, generating a reply message (Triantafillou: section 3.3, target node, step c);

wherein the second node is for item look-up (Triantafillou: section 3.3, target node, steps a-b), said second node comprising:

i) data identifying an item with which the node is associated (Triantafillou: section 3.2);

ii) wherein other such nodes are each associated with an item assigned to the same virtual directory, whereby said linking data together define a plurality of virtual networks for item look-up, each of which networks corresponds to a respective different directory (Triantafillou: section 3.2-3.3; DCRT definition; requesting node, step a-b);

and wherein at least one computer has retrieval means responsive to receipt of a query identifying a directory (Triantafillou: section 3.3, target node, step a-b) to:

i) send to a node of the virtual network for directory look-up an enquiry message identifying the directory (Triantafillou: section 3.3, requesting node, steps b-c).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Triantafillou for using document categories and having category lookup and routing tables. The teachings of Triantafillou, when implemented in the Bonsma system, will allow one of ordinary skill in the art to have category nodes for looking up items they maintain or related nodes within the category. One of ordinary skill in the art would be motivated to utilize the teachings of Triantafillou in the Bonsma system in order to increase the efficiency of querying by categorizing items and load balancing requests.

The Bonsma/Triantafillou system does not teach:

wherein a reply message identifies a computer the node is located on;

wherein a reply message includes the item;

the second node further comprising:

iii) software operable:

in response to an enquiry message that identifies another of the items, forwarding said enquiry message to another node of the network; and

in response to an enquiry message that identifies an item the node is associated with, generating a reply message;

and wherein at least one computer has retrieval means responsive to receipt of a query identifying an item to:

ii) upon receipt of a reply message thereto, to send to a computer an enquiry message identifying the item; and

iii) to receive the reply message containing the item.

Kwon, in a similar field of endeavor, teaches:

wherein a reply message identifies a computer the node is located on (Kwon: section 3.2, provides returning computer IP of node);

the second node further comprising:

iii) software operable:

in response to an enquiry message that identifies another of the items, forwarding said enquiry message to another node of the network (Kwon: section 3.2, step-by-step method provides for forwarding if local lookup fails); and

in response to an enquiry message that identifies an item the node is associated with, generating a reply message (Kwon: section 3.2, 3-step method provides for returning location information if found);

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Kwon for looking in local items and forwarding if not found. The teachings of Kwon, when implemented in the

Bonsma/Triantafillou system, will allow one of ordinary skill in the art to retrieve file location information in a location-independent node P2P DHT environment. One of ordinary skill in the art would be motivated to utilize the teachings of Kwon in the Bonsma/Triantafillou system in order to effectively identify locations of requested items.

The Bonsma/Triantafillou/Kwon system does not teach:

wherein a reply message includes the item;

and wherein at least one computer has retrieval means to:

ii) upon receipt of a reply message thereto, to send to a computer an enquiry message identifying the item; and

iii) to receive the reply message containing the item.

Adar, in a similar field of endeavor, teaches:

wherein a reply message includes the item (Adar: pg 5, get/push messages provides for receiving item);

and wherein at least one computer has retrieval means to:

ii) upon receipt of a reply message thereto, to send to a computer an enquiry message identifying the item (Adar: pg 5, get/push messages provides for requesting item after query); and

iii) to receive the reply message containing the item (Adar: pg 5, get/push messages provides for receiving item).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Adar for the querying peer to subsequently request the file. The teachings of Adar, when implemented in the

Bonsma/Triantafillou/Kwon system, will allow one of ordinary skill in the art to search for files, via directory lookups, on a DHT P2P network, and then request the file. One of ordinary skill in the art would be motivated to utilize the teachings of Adar in the Bonsma/Triantafillou/Kwon system in order to achieve the desired outcome of most end users, obtaining the file.

Regarding claim 2, this claim contains limitations found within claim 1 and the same rationale of rejection is used, where applicable; and wherein the second node further comprises:

Software operable to:

in response to a request message identifying the item with which the node is associated to generate a reply message including the item (Adar: pg 5, "get/push messages" section); and

wherein at least one computer has retrieval means to:

upon receipt of a reply message thereto, to send to the computer identified in the reply message a message requesting the item (Adar: pg 5, "get/push messages" section).

Regarding claim 3, the Bonsma/Triantafillou/Kwon/Adar system teaches wherein each computer having retrieval means includes also secondary retrieval means operable to:

upon receipt of a reply message identifying a computer having one or more items in a particular directory to identify further computers having one or more items in that directory (Kwon: section 3.2; Triantafillou: section 3.2, 3.3);

to create a list of items in that directory (Triantafillou: section 3.3, target node, step c).

Regarding claim 4, the Bonsma/Triantafillou/Kwon/Adar system teaches wherein each computer that has said data item stored thereon also has at least one node of a secondary virtual network for directory look-up, such that said nodes together form a respective secondary virtual network for each virtual directory (Triantafillou: section 3.1 provides a computer may belong to more than one cluster), wherein said node comprising a data storage area for containing a list of addresses of other nodes of the secondary virtual network that have items in the same directory (Triantafillou: section 3.2) and said node is responsive to enquiry messages to return a message containing the addresses of the list (Triantafillou: section 3.2-3.3; Adar: pg 5, "query response"); and

wherein the secondary retrieval means is operable, for identifying further computers having one or more items in the directory in question, to send an enquiry message to the node identified by the reply message and upon receipt of a response to iteratively send enquiry messages to addresses contained in the response to that enquiry message or as the case may be in a response to a subsequent enquiry

message (Adar: pg 5, "query response", "get/push messages"; Triantafillou: sections 3.2-3.3).

Regarding claim 6, this computer claim contains limitations corresponding to those found within claim 1 and the same rationale of rejection is used, where applicable.

Regarding claim 7, this computer claim contains limitations corresponding to those found within claim 2 and the same rationale of rejection is used, where applicable.

Regarding claim 8, this computer claim contains limitations corresponding to those found within claim 3 and the same rationale of rejection is used, where applicable.

Regarding claim 11, the Bonsma/Triantafillou/Kwon/Adar system teaches comprising a plurality of computer nodes, wherein each computer stores data items, each data item being assigned to one of a plurality of virtual directories (Triantafillou: sections 3.2-3.3), the network having:

first retrieval means responsive to input of a directory name to identify a computing node having items in that directory (Triantafillou: sections 3.2-3.3 provide for node lookup based on category);

second retrieval means connected to receive an address identified by the first retrieval means and operable in response thereto to identify further computing nodes

having items in the same directory (Triantafillou: sections 3.2-3.3 provide for cluster to node IDing based on same category);

wherein each computing node having items in a given directory has associated with it a data storage area for containing addresses for other computing nodes having items in the same directory and is responsive to enquiry messages to return a message containing the addresses of the list (Triantafillou: sections 3.2-3.3 provide for cluster to node ID mapping; Adar: query message for returning addresses);

and wherein the second retrieval means is operable to send an enquiry message to the node identified by the first retrieval means and upon receipt of a response to iteratively send enquiry messages to addresses contained in the response to that enquiry message or as the case may be in a response to a subsequent enquiry message, thereby identifying a plurality of computing nodes having items in the directory in question (Triantafillou: sections 3.2-3.3 provide for mapping categories to nodes; See Adar for querying to get locations).

Regarding claim 12, the Bonsma/Triantafillou/Kwon/Adar system teaches wherein the retrieval means is operable to retrieve from each of said identified plurality of computing nodes a list of items stored thereon, and to compile a composite list of said items (Triantafillou: section 3.3, target node, step c).

Regarding claim 16, the Bonsma/Triantafillou/Kwon/Adar system teaches wherein the first retrieval means is formed by a primary network of virtual nodes, each node being

defined by a list of links to other nodes of the secondary network, each entry in the list including a label and address of the respective other node (Adar: pgs 4-5 describe messages for identifying links with unique client ID and IP address; see also Bonsma: section 3); and

wherein each node includes i) means responsive to receipt of a request message containing a label to propagate the request message within the network, and ii) means responsive to receipt of a request message containing a label matching the label of the node receiving it to generate a reply message (Adar: pgs 4-5 describe requesting content and receiving it).

Regarding claim 17, the Bonsma/Triantafillou/Kwon/Adar system teaches wherein the second retrieval means is formed by a secondary network of virtual nodes, each node being defined by a list of links to other nodes of the primary network, each entry in the list including an address of the respective other node (Bonsma: section 3, Adar: pgs 4-5; Triantafillou: section 3.2); and

wherein each node includes means responsive to receipt of a request message to generate a reply message containing the addresses of the list (Triantafillou: section 3.2 provides for cluster to node ID mapping).

Regarding claim 18, this system claim comprises limitations found within that of claim 16 and the same rationale of rejection is used, where applicable; and wherein the reply message generated by a node of the primary network includes the address of that node

of the secondary network which is associated with the node generating the reply message (Adar: pg 4-5 for generating reply messages with addresses; Triantafillou: section 3.2 for knowing nodes of cluster).

10. Claims 5, 9-10, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonsma et al ("A distributed implementation of the SWAN peer-to-peer look-up system using mobile agents", 2002), in view of Triantafillou et al ("Towards high performance peer-to-peer content and resource sharing systems", 2003), Kwon et al ("An efficient peer-to-peer file sharing exploiting hierarchy and asymmetry", 2003), and Adar et al ("Free Riding on Gnutella", 2000), and in further view of Official Notice.

Regarding claim 5, the Bonsma/Triantafillou/Kwon/Adar system teaches wherein some of the said directories are assigned, as subdirectories (other semantic categories), and wherein each computer having retrieval means also includes:

a first subdirectory retrieval means responsive to input of a directory name to identify a computer node having items in at least one subdirectory assigned to that directory (Triantafillou: section 3.3, requesting node steps a-b, target node steps a-b);

a second subdirectory retrieval means connected to receive an address identified by the first subdirectory retrieval means and operable in response thereto to identify further computing nodes having items in at least one subdirectory assigned to the same directory (Triantafillou: section 3.2-3.3).

The Bonsma/Triantafillou/Kwon/Adar system does not teach wherein subdirectories (other semantic categories) may be assigned to directories (a first semantic category).

An official notice is taken that such use of nesting categories for grouping purposes was well known in the art at the time the invention was made by one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize any known categorization technique including nesting category descriptors because it would have enabled practicing the Bonsma/Triantafillou/Kwon/Adar system.

Regarding claim 9, this computer claim contains limitations corresponding to those found within claim 5 and the same rationale of rejection is used, where applicable.

Regarding claim 10, the Bonsma/Triantafillou/Kwon/Adar/ON system teaches wherein the retrieval means is operable to compile a composite list of said subdirectories (Triantafillou: section 3.2-3.3 provides for generating list of all categories).

Regarding claim 13, the Bonsma/Triantafillou/Kwon/Adar system teaches comprising:

a plurality of computer nodes, wherein each computer stores data items, each data item being assigned to one of a plurality of virtual directories, some of said

directories being assigned, as subdirectories (Triantafillou: sections 3.2-3.3 provide for multiple categories);

first retrieval means responsive to input of a directory name to identify a computing node having items in at least one subdirectory assigned to that (Triantafillou: sections 3.2-3.3 provide for node lookup based on multiple category matching);

second retrieval means connected to receive an address identified by the first retrieval means and operable in response thereto to identify further computing nodes having items in one subdirectory assigned to the same directory (Triantafillou: sections 3.2-3.3 provide for cluster to node IDing based on multiple category lookups);

wherein each computing node having items in at least one subdirectory assigned to a given directory has associated with it a data storage area for containing addresses for other computing nodes having items in the at least on subdirectory assigned to the same directory and is responsive to enquiry messages to return a message containing the addresses of the list (Triantafillou: sections 3.2-3.3 provide for cluster to node ID mapping for multiple categories; Adar: query message for returning addresses);

and wherein the second retrieval means is operable to send an enquiry message to the node identified by the first retrieval means and upon receipt of a response to iteratively send enquiry messages to addresses contained in the response to that enquiry message or as the case may be in a response to a subsequent enquiry message, thereby identifying a plurality of computing nodes having items in subdirectories of the directory in question (Triantafillou: sections 3.2-3.3 provide for

mapping categories to nodes for multiple categories; See Adar for querying to get locations and requesting items).

The Bonsma/Triantafillou/Kwon/Adar system does not teach wherein subdirectories (other semantic categories) may be assigned to directories (a first semantic category).

An official notice is taken that such use of nesting categories for grouping purposes was well known in the art at the time the invention was made by one of ordinary skill in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize any known categorization technique including nesting category descriptors because it would have enabled practicing the Bonsma/Triantafillou/Kwon/Adar system.

Regarding claim 14, the Bonsma/Triantafillou/Kwon/Adar/ON system teaches wherein the retrieval means is operable to compile a composite list of said subdirectories (Triantafillou: section 3.2).

Regarding claim 15, this claim contains limitations found within that of claim 13 and the same rationale of rejection is used, where applicable.

11. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonsma et al ("A distributed implementation of the SWAN peer-to-peer look-up

system using mobile agents", 2002), in view of Triantafillou et al ("Towards high performance peer-to-peer content and resource sharing systems", 2003), Kwon et al ("An efficient peer-to-peer file sharing exploiting hierarchy and asymmetry", 2003), and Adar et al ("Free Riding on Gnutella", 2000), and in further view of Bonsma et al (WO 03/034669, herein "Bonsma02").

Regarding claim 19, the Bonsma/Triantafillou/Kwon/Adar system teaches wherein the second retrieval means is formed by a secondary network of virtual nodes, each node being defined by a list of links to other nodes of the primary network, each entry in the list including an address of the respective other node (Bonsma: section 3; Triantafillou: section 3.2);

The Bonsma/Triantafillou/Kwon/Adar system does not explicitly teach wherein each node includes means operable and to propagate exploratory messages each containing the label and address of the initiating node and wherein each node is operable upon receipt of an exploratory message containing a label matching that of the receiving node and an address not matching that of the receiving node to generate a notification message for addition of a link to the secondary network, said notification message identifying the node initiating the exploratory message and containing the address of the node of the secondary network associated with the receiving node.

Bonsma02, in a similar field of endeavor, teaches wherein each node includes means operable to propagate exploratory messages (query or FIND messages) each containing the label and address of the initiating node (Bonsma02: pg 15, line 9-12) and

wherein each node is operable upon receipt of an exploratory message containing a label matching that of the receiving node and an address not matching that of the receiving node to generate a notification message for addition of a link to the secondary network (Bonsma02: abstract) said notification message identifying the node initiating the exploratory message and containing the address of the node of the secondary network associated with the receiving node (Bonsma02: pg 15, lines 24-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Bonsma02 for searching for neighboring nodes. The teachings of Bonsma02, when implemented in the Bonsma/Triantafillou/Kwon/Adar system, will allow one of ordinary skill in the art to create a bootstrapping content addressable network. One of ordinary skill in the art would be motivated to utilize the teachings of Bonsma02 in the Bonsma/Triantafillou/Kwon/Adar system in order to allow efficient discovery and link management in the distributed CAN environment.

Regarding claim 20, the Bonsma/Triantafillou/Kwon/Adar/Bonsma02 system teaches wherein the notification message contains, as destination, the address of the initiating node (Bonsma02: abstract) and the initiating node is operable upon receipt thereof to forward to the node of the secondary network associated with the initiating node a message requesting addition of a link between it and the node having the address contained in the notification message (Bonsma02: pg 34, lines 21-27).

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonsma et al ("A distributed implementation of the SWAN peer-to-peer look-up system using mobile agents", 2002), in view of Triantafillou et al ("Towards high performance peer-to-peer content and resource sharing systems", 2003), Kwon et al ("An efficient peer-to-peer file sharing exploiting hierarchy and asymmetry", 2003), and Adar et al ("Free Riding on Gnutella", 2000), Bonsma et al (WO 03/034669, herein "Bonsma02"), and further in view of Yemini et al (US 2002/0163889 A1).

Regarding claim 21, the Bonsma/Triantafillou/Kwon/Adar/Bonsma02 system does not explicitly teach adding and removing addresses of neighboring nodes to routing lists as claimed.

Yemini, in a similar field of endeavor, teaches wherein each node of a secondary network includes processing means programmed to perform the following operations:

receiving messages (Yemini: [0035]);

responding to messages requesting information about the contents of the list (Yemini: [0037]);

complying with received requests to remove an address from the list and insertion of another address into the list (Yemini: [0037]);

in response to receipt of a message requesting a link between the node and a second node (Yemini: [0037]);

generating a message to the second node requesting information about the contents of its list (Yemini: [0072]-[0075]);

determining whether both the first node and second node has in each case a number of addresses in its list which is less than the predetermined number (Yemini: [0068] specifies nodes exchange only the best labels/neighbors);

in the event that this condition is satisfied, inserting into its list the address of the second node and generating a message to the second node requesting the second node to add to its list the address of the node (Yemini: [0069]);

in the event that this condition is not satisfied, determining whether the node has a number of addresses in its list which is at least two less than the predetermined number, and if so- selecting from the list of the second node the address of a third node; inserting the address of the second node into the list of the first node and inserting the address of the third node into the list of the first node; generating a message to the second node requesting the removal of the address of the third node from the list of the second node and insertion of the address of the node; generating a message to the third node requesting the removal of the address of the second node from the list of the third node and insertion of the address of the node. (Yemini: [0098]-[0100] specifies that when a node moves, the address are removed from the adjacent nodes it leaves and the address is added to the adjacent nodes it moves to; See also Figure 7)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Yemini for managing node links in the fashion stated. The teachings of Yemini, when implemented in the Bonsma/Triantafillou/Kwon/Adar/Bonsma02 system, will allow one of ordinary skill in the art to dynamically manage node links in a distributed CAN as specified. One of ordinary

skill in the art would be motivated to utilize the teachings of Yemini in order to allow the network to self-adjust when nodes are added or removed in real-time.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY NICKERSON whose telephone number is (571)270-3631. The examiner can normally be reached on M-Th, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/J. N./
Jeffrey Nickerson
Examiner, Art Unit 2442

/Andrew Caldwell/
Supervisory Patent Examiner, Art Unit 2442